ABSTRACT

The present invention relates to Wavelength Division Multiplexing (WDM) based optical communications, and more particularly to an Fabry-Perot (FP) laser apparatus mode-locked to a multi-frequency lasing light source and an optical transmission apparatus using the same. An FP laser apparatus mode-locked to a multi-frequency lasing light source, comprises an optical amplifier that amplifies inputted optical signals, a laser light source that wavelength division demultiplexes part of the inputted optical signals, multiplexes the demultiplexed optical signals, re-transmits the multiplexed optical signals, wavelength division demultiplexes the remaining part of the amplified optical signals, and outputs signals mode-locked to the demultiplexed signals, and a first circulator that inputs the remaining part of the amplified optical signals into the laser light source, and outputs, to an optical transmission link, optical signals mode-locked to the multi-frequency lasing light source outputted from the laser light source.